

Good Morning Students,

I have enjoyed reading and answering all of your questions about beef, cattle and ranching! I have tried to answer all of your questions. I have broken them into categories to help you locate your questions/answers a little easier. You all had some terrific questions. Please let me know if there is anything else that I can answer for you.

Have a great week. Eat lots of beef!

Mackenzie

Questions about Mackenzie

- 1. Do you ever get sad when your cows are getting butchered? If not, what makes the process easier?** Though some may think it seems sad that our cattle get butchered, it is part of the beef production process. As a cattle rancher, I take great pride in knowing that we raise cattle that will ultimately be harvested for beef and that beef will feed America.
- 2. Do you like beef?** Absolutely, I think beef is delicious! Plus, beef is a great source of protein and helps keep my muscles strong!
- 3. What is your specific job?** My specific job changes from day to day! Since I am a full partner in the ranch with my mom and grandpa, my job can include anything related to running the ranch on the ground or in the office, including pumping water, checking or fixing pipelines of water or pasture fences, handling business in the office, working with cattle (branding, vaccinating, doctoring the sick ones, moving them from one pasture to another in order to let the forage in each pasture have time to rest and replenish), feeding the horses and dogs, getting groceries for my family, or going to meetings and conferences where I learn more about ranching (including caring for our cattle, running a smooth operating business, managing forage/grasses and rangeland to preserve the land, etc). Every day is different and brings about new opportunities to learn and work with my family.
- 4. Do you all eat your own product, and only your product?** Because of convenience, food safety and time constraints, it is more efficient and cost effective that we purchase the beef we consume from a grocery store (so, the cattle we raise on this ranch do not become the beef on our personal table). We sell our calves to folks who will continue the pasture to plate process, going from our pastures to a livestock auction yard, feedlot and eventually packing house, where the cattle are slaughtered and the beef (once processed) is shipped to restaurant supply and grocery stores across the country.
- 5. If there is one job that you could choose to do over all the others, what would it be?** My favorite job on the ranch is definitely gathering the cattle and driving them in for the calves to be vaccinated or shipped. I love this part of the job because I get to ride my

favorite horse, Clovis, and I really love working with our cattle and watching the calves grow and the cows thrive.

- 6. Did you go to college and what degree did you get?** I actually did not go to college, I decided to go straight into full-time ranching with my family after graduating high school. In a few years, though, I am planning to go through a few college programs that are specific to ranching and everything involved with it (including range and wildlife management, farrier skills or horseshoeing, business management, and other cool stuff like that).
- 7. How many years did it take you to learn about being a cattle rancher?** I was born into a ranching family, so I was raised living and working on the ranch. Pretty much every day that I wasn't in school or involved in clubs/extracurricular activities, I was working on the ranch! Something that I think is pretty cool about being a rancher is that there will never be two days that are exactly the same. Everything changes from day to day, so each day brings a new opportunity to learn something!
- 8. What time does your work day start? /end?** There are never two days exactly the same on the ranch, so our schedules are always changing! Usually, if we are working on the ranch we live on, we will get up about 4 or 4:30 in the morning and start work just before the sun comes up. If we have to drive to our other ranch to work, we have to get up way earlier, usually about 2 AM, which makes for a very long day! Besides taking some time for lunch, we don't usually stop working until about the time the sun goes down, and sometimes we have to eat lunch while we work because there is just so much to do! Ranchers work very hard every day to make sure we are doing a great job raising and caring for our cattle, so we don't mind putting in the long days and many hours of hard work!
- 9. Do you work every day of the week?** Pretty much! Personally, being able to work with my family makes things easier when I have to go to town or we have meetings or events to go to. Even on days where I have something else going on, we usually need to fit in some kind of work, whether it be just the usual chores of feeding the horses and dogs or fixing a fence that got knocked down or checking to make sure the cattle have enough water in the water troughs around the ranch.
- 10. What age did you start working on the farm?** I was born into a ranching family, so I have been helping with jobs since I was about 4 years old. By the age of 6 I had already won my first saddle in a rodeo! Lots of ranching families joke that their kids can ride horses before they can walk on their own two feet, and that rings pretty true! As soon as I was able to sit up and hold on by myself in a saddle, I was riding horses with my mom and grandpa.

- 11. Do you prefer grassfed or grain fed beef? What is the difference in flavor of the two?** A little background on the difference in the two options first... All cattle spend the majority of their lives grazing on grass in pastures. Conventionally raised beef cattle are transitioned into a feedlot once they reach a certain weight and are finished there by eating a carefully-balanced grain based diet. Grass-finished cattle spend the entirety of their lives grazing on grass in pastures, which takes longer and is not as cost effective for producers. Regardless of whether the cattle were grain-finished or grass-finished, all beef is safe, wholesome and nutritious. In regards to flavor, grass-finished beef tends to be a bit tougher and lacks a bit of flavor, mainly because grass-finished beef does not contain as much fat as grain-finished beef does. A healthy amount of fat in the meat provides more flavorful, tender beef.
- 12. What breed of cattle do you like most? Why?** There are many different breeds of cattle that have come to America from all over the world. Luckily, with all of the different breeds available, ranchers can be more selective when choosing which type of cattle they want to have on their ranch. We have to think about a lot of factors when it comes to selecting our herds, including the cattle's ability to live in a certain type of terrain (rocky, mountains and canyons, smaller rolling hills, flat ground and fields, etc) with various temperatures (really hot summers and cold winters, moderate temperatures year round, etc) and weather patterns (lots of snow in the winter or long winters that are really cold, long summers that are really hot with lots of rain or hardly any rain at all, or moderately balanced weather patterns with good seasons all year), as well as how well the momma cows will be able to raise their calves in all of these variable factors. We also take into consideration how the cattle are "built," which means what their bone structure is and how they handle the amount of feed available to them throughout various times of the year.
- 13. What is your favorite way to eat beef?** I love to eat beef in a lot of different ways, including ground beef in tacos or lasagna, or sliced roast beef on a sandwich, or even a hearty ground beef patty in a cheeseburger. My favorite, though, would have to be a thick, juicy grilled steak served with some grilled vegetables and maybe roasted or baked potatoes. Yum!
- 14. Do you have a favorite cow on your ranch?** Currently I do not have a favorite cow on the ranch, but my grandpa and I really liked one certain cow for a long time. She was 17 years old when she passed away, but she was a really great momma cow, having a strong calf every year for about 15 years and producing just the right amount of milk to keep that calf growing before the calves were weaned.

15. If you had a different job, what job would you want to do? I really love being a cattle rancher, but I also really love cooking and planning parties. So, maybe later in my life, I will have two jobs- a cattle rancher and an event planner or chef! Either way, it is always a good idea to be a good cook and be able to pull big meals together since we have some pretty big crews of hungry cowboys that come help us work cattle when we are really busy!

16. We know from reading your letter your family has been in the cattle business for 120 years. But, we were wondering if it is what you have always loved and wanted to do. Yes, I have always wanted to be a cattle rancher. I am very lucky to have grown up in a family that is so loving and passionate about ranching, and I have always admired the fact that we as cattle ranchers have a huge responsibility to raise good cattle and in turn provide safe, wholesome, nutritious and delicious beef for our family and everyone else's, too.

Questions about the ranch

- 1. How many employees do you have in all of your farms?** We have two cattle ranches, and full time it is just myself, my mom and my grandpa who work them, so we have our hands full! When we have more work to do than the three of us can handle, we rely on our friends and neighbors, who come over and help us from time to time. Having and being good neighbors is very important in ranching because we all work together to get everything done, and we have a lot of fun doing it!
- 2. What companies do you guys give your meat to?** As ranchers, we are the first step in the pasture to plate process. From our ranch, we haul our weaned calves (weighing 400-600 pounds) to a livestock auction market, where they are sold to a stocker/feeder. At the stocker operation, the calves live and graze in fields or pastures until they reach about 700 or 800 pounds, at which point they are hauled to another livestock auction market and sold to a feedlot operation. At the feedlot, the cattle are fed and raised to reach about 1300 pounds, at which point they are sent to a packing house for slaughter and processing. Once the beef is processed, it is sent to restaurants and grocery/food service stores across the country.
- 3. Do you take your cows out on trails?** There are a few reasons we gather and move our cattle. Sometimes we need to gather the cattle out of a large pasture and “drive” (they walk down trails and we follow on horseback) them to a corral for branding, vaccinating, doctoring, weaning, shipping, etc. Other times we gather cattle the same way and instead “drive” them to another pasture/part of the ranch where there is better forage for them to feed on. This is called “pasture rotation” and is essential to maintaining the grassland terrain of our ranches. We move cattle from pasture to pasture at different times of the year to allow the pastures to have time to rest and replenish the forage/grasses.
- 4. How long does it take for you to collect all the leather and sew it if you do?** We do not harvest the cattle at our ranch. The byproducts from cattle are taken and produced

into goods at other businesses. You can see a cool video about how footballs are made at <https://www.youtube.com/watch?v=DHvi6RoQaxQ>

5. **Has anything ever gone wrong? If so what happened?** On the ranch, we take pride in handling our cattle in the safest way possible. The safety of our cattle, horses, and ourselves is a top priority. As far as things “going wrong,” occasionally cattle will get spooked by something and stampede, which rarely but occasionally results in a down fence line (these stampedes are rare and are usually very preventable and controllable if they occur). Also, sometimes water pipelines break or water pumps quit, but those types of things are relatively easily fixed.
6. **What other products do you produce besides beef?** For production purposes, we only raise cattle for beef (which of course also provide many byproducts once the cattle are harvested). On the ranch, though, we also have horses that we ride to work cattle on.
7. **What is the price of the meat? (How do you sell your product?)** The price of our cattle and the price of beef in the grocery store depends on where the cattle market and a few other markets stand. Plus, it also comes down to supply and demand, and right now the beef community has a low supply of cattle and our input costs are up as a result of drought and other environmental/weather problems. Currently, for example, the cattle market is bringing relatively low selling prices (cattle are sold with price per pound) compared to a few years ago, while beef in the grocery store can appear a bit more expensive. The price you see in the grocery store reflects all of the different steps and costs that go in to raising the cattle and processing the beef.
8. **How many cows do you have at your farm?** On both of our ranches combined, we have 350 mamma cows, and most of them have calves with them right now. We also have 20 bulls.
9. **How many cows do you kill a year on average?** Nationally in 2015, there were 28,740,000 (28.74 million) head of cattle (including steers and heifers from feedlots and older cull cows and bulls) slaughtered in the US, which totaled about 23,690,000,000 (23.69 billion) pounds of beef (commercial carcass weight). That’s a lot of beef!
10. **If you kill all the calves when they grow up, how are you going to make more calves and therefore more beef?** Each year, ranchers with cow/calf operations wean all of their calves and sort them into steers (castrated males) and heifers (females). Then, we go through all of the heifer calves and select the best ones to keep as “replacement heifers.” These young heifers will go back into our herd to replace the cows that are older and will no longer have calves. Retaining these good, young heifers keeps our base herd numbers up and that in turn ensures that we have cows to keep having calves each year.
11. **How do you keep track of all the steer when they are out on the range?** For the most part, ranchers have their cattle in large fenced pastures. This helps keep our cattle from straying away from our ranch. Cattle walk in to water daily, so that is one way we can

keep track of them. Also, we ride and check our herds every few days to make sure our cattle are happy and healthy.

- 12. About how many of your cattle get sick every year?** Fortunately, because of the good vaccination program we have with our veterinarian, not many cattle get sick each year. For the few that do get sick, we work closely with our vet to properly administer antibiotics or other treatments to nurse the sick animal back to health.
- 13. Do you raise any other animals besides cows?** For production purposes, no. We only raise cattle for beef. On the ranch, though, we also have horses that we ride to work cattle on.
- 14. Do you have a mascot for your business?** A: No, we don't. But, we have a few cattle brands that go along with our business, including a "lazy cross u" brand for the Malpai Ranch cattle, a "bird's eye" brand for our J Bar A Ranch cattle, and a "cola blanca" (whitetail deer head) brand from my small herd of cattle that I started as an FFA project.
- 15. How old is your oldest cow?** Currently, our oldest cow is about 12 years old. But, one of my favorite cows lived to be 17!
- 16. Do you have to pick up the cow dung?** No, we don't have to pick up the manure on the ranch. Since the cattle roam in big pastures, their manure is everywhere and is actually very nutrient-rich, which makes it excellent fertilizer for our grasses, forage and plants in the pastures.
- 17. Are there any specific brands associated with your cows?** Yes, we have several brands. We have a "lazy cross u" brand for the Malpai Ranch cattle, a "bird's eye" brand for our J Bar A Ranch cattle, and a "cola blanca" (whitetail deer head) brand from my small herd of cattle that I started as an FFA project.
- 18. Is your farm near Nevada?** No, our ranches are both in southeast Arizona, near Douglas. One of our ranches is right on the US/Mexico International Border, and the other is just north of it.
- 19. How many farms do you own?** My family owns two cattle ranches.
- 20. If you get attached to a cow, do you still harvest it?** Though some may think it seems sad that our cattle get butchered, it is part of the beef production process. As a cattle rancher, I take great pride in knowing that we raise cattle that will ultimately be harvested for beef, and that beef will feed America. As a general rule, we don't make pets out of our cattle, which includes not naming them and not becoming emotionally attached to

them individually. However, we always take great care of them, making sure they have plenty of water and good land to live and graze on, and that they are content and healthy.

- 21. How do they kill the cows? Who is the person that does this job on the ranch?** We do not slaughter any cattle on our ranch. We sell our calves to folks who will continue the pasture to plate process, going from our pastures to a livestock auction yard, feedlot and eventually packing house, where the cattle are slaughtered (very humanely and safely) and the beef (once processed) is shipped to restaurant supply and grocery stores across the country.
- 22. How do you move all the meat once it's been processed?** All of the raw beef moves on various conveyer belts while it is being processed. Once the beef has been cut up and packaged in plastic (vacuum packed or modified atmosphere packed-that's the kind you most often see in the grocery store where the beef is on a little tray and wrapped in plastic wrap), it is put in large cardboard boxes and sold to restaurant supply or grocery stores as boxed meat. The beef is hauled in refrigerated cargo trucks from the packing plant to the stores and is then unloaded into their large room refrigeration units.
- 23. At what age do they die at?** Young cattle harvested for beef are slaughtered at about the age of 2 or 3 years old. Older cows that have lived to raise a calf each year may live to be about 15 years old.
- 24. Do your parents help at the ranch; if so, what are their jobs?** My mom, my grandpa and I work together on the ranches. Sometimes, my dad helps too. Usually, mom's job changes from day to day, as do mine and my grandpa's. Our jobs can include anything related to running the ranch on the ground or in the office, including pumping water, checking or fixing pipelines of water or pasture fences, handling business in the office, working with cattle (branding, vaccinating, doctoring the sick ones, moving them from one pasture to another in order to let the forage in each pasture have time to rest and replenish), feeding the horses and dogs, getting groceries for my family, or going to meetings and conferences where I learn more about ranching (including caring for our cattle, running a smooth operating business, managing forage/grasses and rangeland to preserve the land, etc). Every day is different and brings about new opportunities to learn and work together as a family.
- 25. Why do you take the babies away for the mothers?** Calves are weaned off of their mothers in order to continue the pasture to plate process, plus it gives the momma cows time to rest and regain optimum health before they have another baby calf. Once calves are weaned, they are shipped to a livestock auction market, sold and shipped to a stocker operation or directly to a feedlot, then fed to reach appropriate slaughter weight, shipped

to a packing house, slaughtered and processed.

- 26. If there is snow in the winter, how do you feed the grass-fed cattle?** Ranchers who raise cattle in areas where there is snow in the winter have to provide feed for their cattle. This usually means that the ranchers will either grow hay in the summer and harvest and store it for the winter, or buy lots of hay, and feed it and provide additional supplements for the cattle once the snow comes. Many of the types of hay that are fed are actually grasses that were baled when the grass was plentiful and then stockpiled for winter.
- 27. What kind of cattle do you have on your ranch?** When my family first started ranching in Arizona in the late 1800's and early 1900's, they raised Hereford cattle. Through the years, our cattle herd has evolved and adapted to what the market demands, moving from Hereford to Brahman/Hereford cross cattle (aka Braford or F-1 cattle), then to Black Angus most recently.
- 28. Do your cattle roam in alfalfa fields or in the desert?** The desert here is not a "desert" as you may think of it. Our "desert" actually consists of mountain grasslands and valley grasslands, with nutrient-rich soil and diverse terrain.
- 29. Where is your farm?** Our cattle ranches are both in southeast Arizona, near Douglas. One of our ranches is right on the US/Mexico International Border, and the other is just north of it.
- 30. How many head of cattle are you raising at the present time?** On both of our ranches combined, we have 350 momma cows, and most of them have calves with them right now. We also have 20 bulls.
- 31. Does your farm also produce milk?** No, our ranches only raise cattle for beef. Most cattle ranches are solely focused on raising cattle to produce beef, while dairy farms are mostly focused on producing milk.
- 32. What is a cattle drive? Why do you do cattle drives?** There are a few reasons we gather and move our cattle. Sometimes we need to gather the cattle out of a large pasture and "drive" (they walk down trails and we follow on horseback) them to a corral for branding, vaccinating, doctoring, weaning, shipping, etc. Other times we gather cattle the same way and instead "drive" them to another pasture/part of the ranch where there is better forage for them to feed on. This is called "pasture rotation" and is essential to maintaining the grassland terrain of our ranches. We move cattle from pasture to pasture at different times of the year to allow the pastures to have time to rest and replenish the forage/grasses.
- 33. Do you have any wild cattle on your ranch?** Most of our cattle are very manageable and cooperative, and would not be classed as "wild." However, now and then, we have a

few that we call “trotty,” which means they have just a bit too much energy, but none of our cattle ever run away permanently.

34. How many head did your family start off with when they first started ranching?

Many generations ago, my family started ranching with 125 heifers and 10 bulls.

35. Which breed of cattle does your ranch have the most of? When my family first started ranching in Arizona in the late 1800’s and early 1900’s, they raised Hereford cattle.

Through the years, our cattle herd has evolved and adapted to what the market demands. Most recently, we have transitioned our herd to be primarily Black Angus cattle.

36. What is your brand for your ranch? We have a “lazy cross u” brand for the Malpai Ranch cattle and a “bird’s eye” brand for our J Bar A Ranch cattle.

37. What specific place do you send your cattle to in order to be harvested and packaged?

We sell our calves to folks who will continue the pasture to plate process, going from our pastures to a livestock auction yard, sold to a stocker operator, then sold again to a feedlot operation and eventually shipped to a packing house, where the cattle are slaughtered and the beef (once processed) is shipped to restaurant supply and grocery stores across the country.

38. What do you do with the cattle when the weather is bad? On our ranch, we rarely have very bad weather. If it rains and it’s warmer temperatures, the cattle get wet and feel extra good, so they run and buck and play. If it is colder weather or it rains a cold rain, the cattle will try to “lay up” amongst trees in efforts to shield themselves a bit from the elements, including high winds. Naturally, though, cattle have good survival instincts and are able to pretty much take care of themselves during various weather changes.

39. How many babies are born a year? In 2015, there were about 34,300,000 calves born across the country.

40. How are they given vaccinations? Cattle are given vaccinations in the form of a shot from a syringe.

41. What is the name of your ranch? One of our ranches is called the “Malpai Ranch” (mal-uh-pie) and the other is the “J Bar A Ranch”.

42. About how many people work with you? Usually, there are about 4 people working on the ranches at any given time. We are lucky to have really good friends and neighbors, though, that come over and help us when we have more cattle work than the 4 of us can

handle by ourselves (like when we gather all of our cattle to sort and wean calves off of).

- 43. How big is your land?** Both of our ranches put together total 25,600 acres.
- 44. How many bulls do you have on your farm?** We have about 20 bulls, which are divided among the two ranches based on how many cattle are at each ranch.
- 45. Also, do the cows get names? You told us that they get a number. Do they get numbered in order, 1, 2, 3....?** As a general rule, we don't make pets out of our cattle, which includes not naming them (however, we always take great care of them, making sure they have plenty of water and good land to live and graze on, and that they are content and healthy). Many ranchers, stocker operations and feedlots use ear tags to help with identification of the cattle. An ear tag can have the following information printed on it: the brand on the animal, the name of the ranch it is from, a contact name or phone number for the owner, an individual number for the animal (many "registered" herds utilize a numerical system in order to be able to trace back to a calf's mother in the herd), etc.

Questions about cows

- 1. I was wondering how many crayons can 1 cow make?** An exact number of crayons made from one single cow cannot be pinpointed. Fat from cattle (elements called stearic acid and tallow) is what goes into products like crayons. It is not as easy to pinpoint the exact number of crayons because all of the excess fat (and other byproducts, used in making other products like tires) from harvested cattle goes together into making crayons and other products. It's pretty cool to know that there is not much of anything that goes to waste from slaughtering cattle because we can use so many byproducts to make household and classroom items, pharmaceuticals, and some foods like jello and marshmallows.
- 2. I learned that cologne comes from cows. Who came up with the ideal of cologne made from cows?** Cologne contains fatty acids that come from cattle.
- 3. How do you make footballs with cow insides?** Footballs are actually generally made from leather, which is cow hide.
- 4. I was wondering, how do cows sleep at night?** Cattle lay down to sleep. Fun Fact: When cattle lay down, their front end goes down first, but when they get up, their back end gets up first!
- 5. What food do you feed the cows?** Cattle that live on pasture graze on grasses and other forages. Some cattle temporarily live in fields where crops are grown during the off-season for the crop, including alfalfa, corn and wheat fields. Once cattle are transitioned into a feedlot, they are fed a carefully balanced grain-based diet, which can include corn, oats and cottonseed hulls or other sources of protein and energy; vitamin and mineral rich

foods or supplements; roughages such as hay to scratch the inside of cattle rumens in order to aide digestion; and usually leftover fruits and vegetables from local grocery stores.

6. **At what age are cows butchered?** Young cattle harvested for beef are slaughtered at about the age of 2 or 3 years old (once they weigh about 1300 pounds). Older cows that have lived to raise a calf each year may live to be about 15 years old, before they either die on the range or are sold for slaughter, in which case the beef harvested from these cows will be used in ground beef and other more processed meat products.
7. **Do you use an axe to slaughter the cows and bulls?** In packing houses, cattle are walked into a lead up chute and humanely stunned before their throats are cut with a knife.
8. **How do your cows and bulls get slaughtered viciously or very nicely?** Cattle are slaughtered quickly and very humanely. The safety of the animals and of the humans working near them is of the utmost priority.
9. **How do you know if there male or female?** Cows and bulls have different reproductive organs that indicate their gender, similar to humans and other mammals.
10. **About how many cows do you butcher a week?** Personally, we don't butcher any cows on our ranches. While the exact number of cattle harvested each week is hard to determine, there were 28,740,000 (28.74 million) head of cattle (including steers and heifers from feedlots and older cull cows and bulls) slaughtered in the US last year, which totaled about 23,690,000,000 (23.69 billion) pounds of beef (commercial carcass weight). That's a lot of beef!
11. **How is toothpaste made from cattle byproducts?** Ever since cattle have been utilized as a food source for humans, the cattle carcass byproducts have been used to make other products. Some examples include toothpaste, candles, crayons and cosmetics which all contain fatty acids from cattle; tires which contain stearic acid (which makes rubber holds its shape under continuous surface friction); insulin (used for treating diabetes and high blood sugar) is made from the cow's pancreas; and so many more household, pharmaceutical and travel-related products contain byproducts from cattle! About 99% of every cow can be utilized for something, which means not much of anything goes to waste! That's awesome!
12. **Do you have baby cows?** Since my family ranches are cow/calf operations, our herd consists of momma cows and baby calves.
13. **Do your cows produce milk?** Our cows produce milk that is solely for their beef calves. Only dairy cattle produce milk that is harvested for human consumption.

- 14. How many babies can a cow have at one time?** Usually cows have only one calf at a time, but occasionally can have twins, though this is rather uncommon.
- 15. How do they make the steer hold still to put the tags on? How do you put it on?** Cattle walk into a chute, where they are temporarily restrained with gates in front and behind them for the safety of the animal and of the humans working with them. We put the tags in the ears with an ear tag applicator, similar to the way human ears are pierced. It is quick and simple.
- 16. We learned that cows can be used to produce footballs, do your cows create footballs?** All cattle that are harvested for beef also provide many useful byproducts. Footballs are one great example as they are made from cattle hides (a byproduct).
- 17. How much does a full-grown steer weigh?** Steers that are “finished” and ready to be slaughtered for beef may weigh from 1000 to 1400 pounds.
- 18. On average, how many pounds does a newborn calf weigh?** Depending on the breed, newborn calves could weigh 60 to 80 pounds on average.
- 19. Do cows get sick easily?** No. Calves are vaccinated very young in efforts to avoid sickness. However, occasionally cattle may get sick due to environmental conditions, in which case we work with a veterinarian to safely administer antibiotics or other treatments.
- 20. How many different kinds of beef are there?** All beef comes from cattle, but there are several differences in the way the cattle may be raised and in turn what the beef may be marketed as. All cattle spend the majority of their lives grazing on pastures, but conventionally raised cattle are grain-finished (meaning they are fed a carefully-balanced grain-based diet in a feedlot once they have been weaned and shipped from the ranch pastures), or grass-finished (meaning they spend the entirety of their lives grazing on pasture. Both grain- and grass-finished beef cattle may be given FDA-approved antibiotics and/or growth-promoting hormones if appropriate, and may be given supplements of vitamins and minerals. Beef can also be “certified organic,” which has the following criteria: cattle can either be grain- or grass-finished, as long as the feed is 100% organic, must be certified by the United States Department of Agriculture’s Agricultural Marketing Service, and may be given vitamin and mineral supplements. Lastly, “naturally raised” beef means the cattle were raised without any antibiotics, preservatives or added hormones, but may have been given supplemental vitamins and minerals. Regardless of the labeling, all beef is safe, wholesome and nutritious.
- 21. Do the different colors of cows effect the products at all?** The color of cattle does not affect their byproducts. However, some breeds of cattle tend to differ slightly in beef quality (most specifically ribeye size and degree of marbling/fat running through the

beef).

22. If you are responsible for the cow's milk, how do you make it clean? There are a lot of factors that go in to keeping the milk clean and safe. The cleanliness begins right from step one, milking the cow. When dairy cows are milked on commercial dairy farms, their teats are cleaned multiple times before and after the milking occurs. This prevents any contaminants from the cow or environment that may have been on the teats from getting in the milk. As the cow is being milked, the milking machine tubes carry the milk to a refrigerated storage vat, where it will stay for less than 48 hours at about 39 degrees Fahrenheit. These vats are agitated to make sure all of the milk inside them stays at an appropriate cold temperature and to make sure the milk fat does not separate from the milk. Once the milk is moved from these vats through stainless steel pipes and into a refrigerated tanker truck, the original storage vats and pipes are cleaned thoroughly before collecting milk again. Milk is collected from the farm every 24 to 48 hours, sometimes quicker depending on the size of the operation. The tanker trucks used to collect the milk and transport it to a processing facility have specially designed stainless steel bodies which are heavily insulated to keep the milk cold during transport. (Fun Safety Fact: The milk tanker drivers are specially trained to evaluate the milk before collecting it, which means they will grade the milk with a quality and determine that the milk is at an acceptable temperature, and does not smell or look bad.) When the milk is delivered to the processing facility, it is stored in refrigerated vats or silos and samples are tested in a lab to ensure there is not antibiotic residue in the milk, measure high quality standards (milkfat, protein, bulk milk cell count and bacteria count), and to ensure it is consistently at the proper temperature before entering the processing facility. Once approved, whole milk is pumped in and undergoes pasteurization (heating every particle of milk to a specific temperature for a specified period of time and cooling it again without allowing recontamination), homogenization (pushing the raw milk through an atomizer to form tiny particles so that the fat is dispersed evenly throughout the milk, stopping the fat from floating to the top of the container), separation (spinning milk through a centrifuge to separate the cream from the milk. After separation, the cream and remaining milk are remixed to provide the desired fat content for the different types of milk being produced. i.e. For "whole milk," the cream is reintroduced until the fat content reaches 3.25%. For "low fat milk," the fat content is 1%. For "skim milk" (sometimes called nonfat milk) the fat content is .05%). Further processing includes micro-filtration, which increases the storage life by ultra high temperature (UHT) treatment, and mixing or culturing milk for flavored and yogurt products. Once processing is complete, the milk is pumped into appropriate packaging (milk jugs, etc), sealed and labeled. The completed milk jugs also travel along an assembly line where a Best By date is sprayed on each item. The jugs are collected and shipped across the country in refrigerated cargo trucks. So as you can see, all of these steps include aspects that help keep the milk safe and clean for human consumption. (some paraphrasing from milk.procon.org)

23. What is that Mad Cow Disease about? Bovine Spongiform Encephalopathy (BSE, commonly referred to as “Mad Cow Disease”) is a progressively fatal degenerative disease that affects the central nervous system of affected cattle. It cannot be spread between animal and animal or human and animal via direct contact. BSE can only be transmitted through feed containing meat and bone meal from BSE-infected cattle. In 1997, the Food and Drug Administration (FDA) banned the use of such ruminant-derived protein supplements in cattle feed. The feed ban breaks the cycle of BSE and, with full compliance, assures the classical disease will be eliminated. In 2003, USDA strengthened its food safety program by banning from the human food supply any cattle that are unable to walk or show signs of possible neurological disease. The most recent firewall established by USDA mandates removal from the food supply material that would most likely carry the BSE agent (such as brain and spinal cord). This process happens every day with every animal slaughtered to ensure this diminishing disease has no effect on public health. And don't worry, the BSE agent has not been found in beef such as steaks, roasts and ground beef; it can only be found in central nervous system tissue such as brain and spinal cord, and these specified risk materials are banned from the food supply. Providing American consumers with top quality, absolutely safe beef has always been and remains to be the number one priority for the beef community, and as such there are multiple safeguards in place to prevent contamination of the beef supply. (some paraphrasing from FactsAboutBeef.com)

24. Do cows have specific patterns or designs? Different breeds of cattle have differing appearances, including color or markings. For example, Black Angus or Red Angus cattle are usually purely black or red in color but may occasionally have a few white patches near the face, while Longhorn cattle are known for their diverse coloring and can be a mix of many colors.

25. How many different kinds of cows are there? There are several hundred breeds of cattle recognized across the globe, with quite a few commonly found in American herds, including Black Angus, Red Angus, Holstein (typically used for Dairy production), Longhorn, Brahman, Hereford, Simmental, Charolais, and more.

26. How many times is a cow milked each day? The frequency of milking varies from dairy farm to dairy farm and depends on the type of milking parlour used, the stage of lactation and milk yield. Most farmers milk their cows twice a day, while others may milk four to five times a day. This doesn't necessarily mean that the cows are producing more milk, but milking more often is not uncomfortable for them as calves would naturally feed at four to six hourly intervals. (paraphrased from ThisIsDairyFarming.com)

27. Do any of the cows fight each other? Sometimes a cow will get annoyed with something, such as another cow, and fight that other cow for no more than a few seconds. However, generally cows are not malicious animals.

28. How can you tell that a cow is sick? A few telltale signs that cows are sick are usually that they are standing with their head hanging down, not eating, or they are laying out on

their side. Other illnesses may include a snotty nose or diarrhea, or even coughing.

- 29. How much milk does a cow produce?** A dairy cow, on average, will produce 6 to 7 gallons of milk per day, while a cow raising a beef calf will produce around 1 to 3 gallons of milk per day.
- 30. Do the cows ever try to run away from the ranch?** No. We work hard to make sure our cattle are content and healthy. Occasionally, if a fence is knocked down, cattle may wander into another rancher's pasture, but either come back across the fence or join the neighbor's herd, and are then brought home when the neighbor discovers them.
- 31. How exactly do you milk a cow, and is it difficult?** A: The udder of a cow has four teats. On a ranch, the only reason we would need to milk a cow would be because the cow or its calf was having a problem nursing. Using your hands, you manipulate the teats from top down to bottom, gently pressing and moving the milk out of the teats and aiming them into a bucket. On most commercial dairy farms (which milk for human consumption), cows are moved from their large pens into a milking parlour. Here, they are put on a carousel, with each teat being cleaned and then hooked to a milking machine (this does not hurt the cow), which gently massages the teats to extract the milk. The machine is attached to tubes which carry the milk to a storage vat, then moved again to be processed. The machines are carefully removed and the teats cleaned again. Lastly, the cows walk out of the milking parlour and begin eating supplied feed in their pens again (Fun Fact: Dairy farmers like to have their cows stand and eat for a while right after they have finished being milked because this way the cows' teats can dry and stay cleaner).
- 32. What do baby cows look like when they are born, are they pink?** Calves are born looking just like all cattle do, but are much smaller than a full-grown cow would be. They are born completely covered with hair and are generally the same color as their mother.
- 33. Can you tell us why a cow has four stomachs?** Actually, cattle have one big stomach that is divided up into four digestive compartments. The first compartment is the rumen. The cow half-chews its food and swallows it, where it travels to the rumen and is mixed with stomach juices and microbes. Next, the matter travels into the second compartment (known as the reticulum), where it is formed into small wads and then regurgitated as "cud." Once the cud is back in their mouth, cattle will chew their cud for a while to further break down the foodstuffs. The chewed cud is swallowed and travels into the third stomach compartment (the omasum), where it is pressed to remove water and is broken down further. Finally, the matter enters the fourth compartment (the abomasum), and is digested and passed through the rest of the digestive system. Cattle have four digestive compartments in their stomachs so that they can more easily break down and digest the tough and coarse foods they eat (forages, grains, etc).
- 34. Should you feed pregnant cows different feeds? If so, what is different about it?** Bred cows on ranches graze on forages/grasses as they normally would. However, some ranchers may choose to supplement their bred cows with specific vitamins or minerals

that would aide in fetal development, milk production, etc.

- 35. How do you start a cattle ranch?** In most simple terms, ranchers start out by buying or leasing land (which must have good forage/grasses; a steady water supply, which also entails having good wells, pipelines, storage tanks, etc; preferably good pasture fences, maybe some pens or corrals to work the cattle in, and maybe some kind of barn area if need be). Next the rancher will buy cows and bulls. The cows are bred by the bulls and then raise a baby calf, which is the start of the pasture to plate process. The rancher sells the weaned calves each year, and retains a few good heifer calves as “replacement heifers,” which will help the rancher to build his herd.
- 36. Who do boy cows taste better?** All beef is safe, wholesome, nutritious and delicious. Beef gets its flavor and tenderness from the amount of fat present throughout the meat. (However, we castrate the bull calves, which makes them steer calves, in efforts to keep the meat more tender without the presence of a lot of testosterone, a hormone in bulls that makes the meat tougher.)
- 37. Why do cattle go to an auction? Where are the auctions held?** Cattle are shipped to an auction to be sold, either from one rancher to another, or from ranchers to stocker operations or feedlots. There are livestock auction barns all over the country, and there are even a few in Arizona. The one we use is in Willcox, Arizona, but there are also cattle auction yards in Marana, Prescott, and Sun Valley.
- 38. Are there different types of cows /bulls?** There are several hundred breeds of cattle recognized across the globe, with quite a few commonly found in American herds, including Black Angus, Red Angus, Holstein (typically used for Dairy production), Longhorn, Brahman, Hereford, Simmental, Charolais, and more.
- 39. How much does a cow eat a day?** Cows eat about 3% of their body weight on a dry matter basis, which means that if the forage/grasses are drier (ours are usually about 90% dry this time of year), the cattle have to eat more to feel full than they would when the grasses are wetter (like when it rains a lot in the summer). In a feedlot, cattle eat a more concentrated ration of feed, with a higher fat and protein content. All in all, cattle grazing on a pretty dry roughage pasture will eat about 40 pounds of feed a day.
- 40. About how tall is a female cow?** Different breeds of cattle have slightly different physical features, including stature. On average, cows used to raise calves for beef production generally stand about 4-5 feet tall from the ground to their topline.
- 41. When you harvest the cattle, what do you do with their teeth?** We are able to utilize many cattle byproducts from carcasses once the beef has been removed. Some examples include bone marrow (used as a treatment of blood disorders) and blood meal (a source of calcium and phosphorus) from the bones and teeth; iron from the blood for the treatment of anemia; insulin (used for treating diabetes and high blood sugar) is made from the

cow's pancreas; and so many more household, pharmaceutical and travel-related products contain byproducts from cattle! About 99% of every cow can be utilized for something, which means not much of anything goes to waste! That's awesome!

42. Do bull's really chase red colored things? Bulls are herd animals, which means they typically are not aggressive when they are part of a herd of cattle. Though testosterone, a hormone in bulls, may cause some aggression and territorial instinct at times, causing bulls to fight each other for a short time, bulls in general are not naturally overly aggressive animals. Many people think of all bulls as those seen in Spanish bull fighting, where they are put in an arena and are chastised for audience entertainment. According to LiveScience.com, "Bullfighting conjures a common image: An angry bull charging at a matador's small red cape, the muleta. But, why does the beast charge at the sight of red? Actually, it doesn't. Bulls, along with all other cattle, are color-blind to red. Thus, the bull is likely irritated not by the muleta's color, but by the cape's movement as the matador whips it around." Bulls are more likely to chase movement that has become irritating to them. So, to answer your question... No, bulls do not chase red colored things because they are red.

43. How do you make the football leather? Footballs are made from cowhide, which is removed from the cow after slaughter and is then cleaned, tanned and cut into pieces that are stitched together and made into footballs.

44. How often do you need to milk a cow? The frequency of milking varies from dairy farm to dairy farm and depends on the type of milking parlour used, the stage of lactation and milk yield. Most farmers milk their cows twice a day, while others may milk four to five times a day. This doesn't necessarily mean that the cows are producing more milk, but milking more often is not uncomfortable for them as calves would naturally feed at four to six hourly intervals. (paraphrased from ThisIsDairyFarming.com)

45. What happens to the cows when it gets cold? Do they hibernate? Cows do not hibernate, but instead have thick skin and grow a nice, thick layer of hair that helps insulate their bodies in colder temperatures. Their survival instincts also kick in and make cows seek shelter when the weather turns colder, so they will lay amongst trees or in places that are more secluded from wind, snow, etc.

46. What happens when it rains? If the cows get wet, they might get really sick. Well, when it rains, they get wet. But if the weather is warm when it rains, then the cattle feel especially good and they run and buck and play. If it is cold when it rains, they try to seek shelter or somewhere where the temperature is a bit warmer or there is not any wind.

- 47. What makes a cow make the milk?** A: Cows only produce milk once they are close to having their calves, and continue to produce milk for their calves until the calves are weaned in 6-9 months. Dairy cattle also have a calf each year, but those calves are separated more quickly and are raised on bottles of milk so that the cow's milk can be harvested for dairy products (milk, cheese, yogurt, cream, etc). Cows need to eat grass and other protein- and energy-rich foods in order to make good milk. The nutrients from what the cow eats are transported by the bloodstream to the mammary glands in the cow's udder, where the milk is made.
- 48. Why do some cows have spots, and others don't?** There are many different breeds of cattle from all over the world, and they are all different shaped, sized and colors (white, gray, brown, black, spotted, etc). Most of the cows with spots you may see around Arizona are either Holstein cows (most commonly found in dairies) or Longhorn cows.
- 49. Where did the cows come from?** Domestic cattle evolved from the prehistoric aurochs, which were a large wild cattle that inhabited Europe, Asia and North Africa over 10,000 years ago. The first cattle in North America were introduced by settlers who came here from Spain and England. We now have breeds of cattle that reside in America that have heritage beginning in countries all over the world.
- 50. How do you get marshmallows from a cow? Could you tell us more about those by products you mentioned and how they are processed?** Ever since cattle have been utilized as a food source for humans, the cattle carcass byproducts have been used to make other products. Some examples include marshmallows, which contain gelatin from cattle hide/skin; tires which contain stearic acid (which makes rubber holds its shape under continuous surface friction); insulin (used for treating diabetes and high blood sugar) is made from the cow's pancreas; toothpaste, candles, crayons, cosmetics and lotions contain fatty acids and protein meals; and so many more household, pharmaceutical and travel-related products contain byproducts from cattle! About 99% of every cow can be utilized for something, which means not much of anything goes to waste! That's awesome!
- 51. If it is not too complicated, please tell us if cows are genetically modified and what that really means.** By definition, cattle are genetically modified, because they are the offspring of other animals. Every living thing (including plants) is genetically modified; we have a combination of our parents' genes. When people talk about GMOs, they are usually talking about transgenic organisms, where a gene from one organism is artificially inserted into another. To date, there are no animals that have had a gene obtained in an artificial manner. When talking about GMOs, there are actually only 10 on the market place today....corn, cotton, soybeans, summer squash, sugar beet, papaya, alfalfa, canola, potatoes, and now apples!

Questions about beef

- 1. How long do you have until the meat gets bad, and you are unable to eat it?** The guidelines for refrigerator or freezer storage of fresh, raw beef and cooked beef differ

slightly... First, let's talk about fresh, raw beef. When handled and stored properly, ground beef (which is more perishable than roasts or steaks) can be stored in the refrigerator for 1 to 2 days; beef cuts used for stews, kabobs or stir-frys can be kept 2 to 3 days, and steaks or roasts can be kept in the fridge for 3 to 4 days, safely. In the freezer, beef that is properly wrapped and stored can last much longer: ground beef can be kept safely frozen for about 3 to 4 months, while steaks, roasts, and cuts for stir-fry, stews or kabobs can be safely kept frozen for 6 to 12 months. Once the beef has been cooked, things change a bit. Leftover cooked beef can be kept in the refrigerator for 3 to 4 days, or in the freezer for 2 to 3 months if properly wrapped and sealed.

- 2. How long does it take to cook the steak?** Cooking times for steaks can vary a bit depending on the method that you are using to cook the meat, as well as how thick the steak is. On average, thinner steaks may take 4-7 minutes, moderately thick steaks may take from 9 to 13 minutes to cook, and thicker steaks may take as long as 16-25 minutes to cook. There are certain temperatures a steak has to be cooked to in order for it to be safe to eat, and there are also different levels of "doneness" that a steak may be eaten at. For medium rare doneness, steaks must reach 145 degrees Fahrenheit, medium doneness is at 160 degrees Fahrenheit, and well done steaks are achieved at 170 degrees Fahrenheit.
- 3. How do you know if the meat is bad or good?** Here are a few things to look for when choosing beef: Color is bright, cherry-red, but meat vacuum-sealed in a bag may appear a darker, purple-ish red (but don't worry, when the beef is exposed to air, it will turn bright red); beef should be firm to the touch; the package should not have any holes or tears. Also, beef should be stored properly in order to keep it fresh and good longer. Proper storage includes refrigeration or freezing the beef as soon as possible after purchasing (and if the beef is being frozen, it needs to be wrapped and sealed really well to not get freezer burn!); beef should be stored on the lowest shelf in a refrigerator, and should be labeled with the date it was purchased from the store so you know how long it has been in your refrigerator, and leftovers of cooked beef should be refrigerated promptly after serving (within 2 hours after cooking).
- 4. How do you keep the meat cold and fresh as you ship it?** Beef is shipped from packing houses to stores and restaurants in large trucks that have special refrigerated trailers. The inside (refrigerator part) of the trailers must be kept at a certain temperature to ensure food safety during transportation.
- 5. Since it takes a long time for beef to get to the store, do you use anything to keep it from rotting?** A: Beef is tightly wrapped and sealed in either vacuum sealed plastic packaging or tightly wrapped plastic wrap and is kept at proper cold temperature to store and ship from the packing house to stores and restaurants on refrigerated trucks.
- 6. Why is beef called beef?** Hundreds of years ago, the Anglo-Saxon "cow" became the French "boeuf" and later evolved into what we know as "beef."

- 7. We see different % of meet in the grocery store all the time. What does this mean? Is this different parts of the cow? Or is this different cows have a different %?** The percentages that you see are representations of the percent lean to percent fat in that package of beef. Ground beef that is around 70% lean (meaning it has 30% fat) is usually best for making burgers and used in recipes that require “browning” the meat in a skillet, including tacos, chili and spaghetti sauce. Moving more toward a mid-range lean-to-fat ratio (about 80 to 85% lean to 20 or 15% fat) is best for things like meatloaf or meatballs, because the beef is formed into a shape and cooked in a pan or skillet. The highest percentage of lean beef (93% lean or leaner) has the least amount of fat mixed in it and meets government guidelines for “lean” meat. This leanest option of ground beef is best used in dishes where draining excess grease after cooking may be difficult (like in casseroles or stuffed peppers), as not much grease is produced when cooking with really lean ground beef.
- 8. How many pounds of beef are purchased a year?** In 2015, there were 24,807,000,000 (24.807 billion) pounds of beef consumed in the United States.